

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method, comprising:  
transmitting and scheduling a data packet for delivery from at least one sending device to at least one receiving device at different rates and in different layers using Asynchronous Layered Coding (ALC) with congestion control and Forward Error Coding (FEC);  
determining at said receiving device missing or mangled data transmitted from said sending device for multiple data rates and multiple layers using negative acknowledgement (NACK)-Oriented Reliable Multicast (NORM) protocols at the receiving device;  
sending an acknowledgement or transmission of missing or mangled data from said receiving device to said sending device ~~or~~ and to another receiving device; and  
transmitting a retransmission of said missing or mangled data from said sending device and/or said other receiving device to complete the data packet and a data transmission session.
2. (Currently Amended) The method of claim 1, wherein said acknowledgment of said missing or mangled data is a multicast or unicast negative acknowledgement message to the sending device and the another receiving device.
3. (Currently Amended) The method of claim 1, wherein said retransmission of missing or mangled data is a multicast or unicast message from the sending device and/or another receiving device.
4. (Currently Amended) The method of claim 1, wherein said missing or mangled data is retransmitted from said sending device and/or said other receiving device that possesses the missing or mangled data from the data transmission.
5. (Currently Amended) The method of ~~claim~~ claim 1, further comprising prioritizing the retransmitting of said missing or mangled data based on said acknowledgement, number of data transmissions missed, location of missed or mangled data or the like.

6. (Currently Amended) The method of ~~claim~~ claim 1, further comprising retransmitting said missing or mangled data by retransmitting the original data transmission.

7. (Original) The method of claim 1, further comprising retransmitting said missing or mangled data by retransmitting only the missing data of the original data transmission.

8. (Original) The method of claim 6, further comprising repositioning said missing or mangled data in the data transmission.

9. (Previously Presented) The method of claim 1, providing reliability management and congestion control to facilitate multicast transmission of data packets to receivers.

10. (Currently Amended) The method of claim 1, further comprising sending the original data transmission from said receiving device using an active Asynchronous Layered Coding (ALC) mechanism including forward error coding.

11. (Previously Presented) The method of claim 1, further comprising transmitting said acknowledgement or missing or mangled data from said receiving device using a negative acknowledgement (NACK) and retransmission mechanism.

12. (Original) The method of claim 1, where said missing or mangled data is from a previous transmission, an earlier transmission or a predicted transmission.

13. (Original) The method of claim 1, further comprising defining unidirectional transmission block identifiers and corresponding objects before transmitting data to a receiving device.

14. (Original) The method of claim 1, wherein said data is transmitted from the sending device using unidirectional protocol.

15. (Original) The method of claim 13, wherein said acknowledgement is transmitted by a receiving device using a bi-directional or uplink simplex protocol using the same transmission block identifier as the unidirectional protocol.

16. (Original) The method of claim 1, further comprising sending an acknowledgment from said receiving or sending device that the missing or mangled data has been correctly received.

17. (Original) The method of claim 1, wherein said acknowledgement contains a plurality of negative acknowledgements regarding missing or mangled data in the data transmission.

18. (Original) The method of claim 1, wherein said receiving device is a personal communication device, GPRS, WLAN, DVB or other similar wireless device.

19. (Original) The method of claim 1, wherein said sending device is a server, IP-based device, GPRS, DVB or other similar wireless device.

20. (Original) The method of claim 1, wherein said sending device and said receiving device are in the same network or in different networks.

21. (Currently Amendment) A computer readable medium storing a computer program including program code, executable in a ~~computer~~ computer, comprising:

program code for transmitting and scheduling a data packet for delivery from at least one sending device to at least one receiving device at different rates and in different layers using Asynchronous Layered Coding (ALC) with congestion control and Forward Error Coding (FEC);

program code for determining missing or mangled data transmitted from said sending device for multiple data rates and multiple layers using negative acknowledgement (NACK)-Oriented Reliable Multicast (NORM) protocols at the receiving device with FEC for repair of damaged packets or packets that have not been received ;

program code for sending an acknowledgement or transmission of missing or mangled data to said sending device ~~or~~ and to another receiving device;

program code for transmitting a retransmission of said missing or mangled data from said sending device and/or said other receiving device to complete transmission of data packet and a data transmission session.

22. (Currently Amended) The computer readable medium of claim 21, wherein said acknowledgment of said missing or mangled data is a multicast or unicast negative acknowledgement message to the sending device and the another receiving device.

23. (Currently amended) The computer readable medium of claim 21, wherein said retransmission of missing ~~or~~ and mangled data is a multicast or unicast message from the sending device and/or another receiving device.

24. (Currently Amended) The computer readable medium of claim 21, wherein said missing or mangled data is retransmitted from said sending device and/or said other receiving device that possesses the missing or mangled blocks.

25. (Previously Presented) The computer readable medium of clam 21, further comprising program code for prioritizing the retransmitting of said missing or mangled data based on said acknowledgement received, number of data transmissions missed, location of the missed or mangled data or the like.

26. (Previously Presented) The computer readable medium of clam 21, further comprising program code for retransmitting said missing or mangled data by retransmitting the entire original data transmission.

27. (Previously Presented) The computer readable medium of claim 21, further comprising program code for retransmitting said missing or mangled data by retransmitting only the missing data of the original data transmission.

28. (Previously Presented) The computer readable medium of claim 25, further comprising program code for repositioning said missing or mangled data in the data retransmission.

29. (Previously Presented) The computer readable medium of claim 21, providing reliability management and congestion control to facilitate multicast transmission of data packets to receivers.

30. (Previously Presented) The computer readable medium of claim 21, further comprising program code for sending the original data transmission from said sending device using an active Asynchronous Layered Coding (ALC) mechanism.

31. (Previously Presented) The computer readable medium of claim 21, further comprising program code for transmitting said acknowledgement or missing or mangled data from said receiver using a negative acknowledgement (NACK) and retransmission mechanism.

32. (Previously Presented) The computer readable medium of claim 21, where said missing or mangled data is from a previous transmission, an earlier transmission or a predicted transmission.

33. (Previously Presented) The computer readable medium of claim 21, further comprising program code for defining unidirectional transmission block identifiers and corresponding objects before transmitting data to the receiving device.

34. (Previously Presented) The computer readable medium of claim 21, wherein said data is transmitted from the sending device using a unidirectional protocol.

35. (Previously Presented) The computer readable medium of claim 32, wherein said acknowledgement is transmitted from said receiving device using a bi-directional or uplink simplex protocol using the same transmission block identifier as the unidirectional protocol.

36. (Previously Presented) The computer readable medium of claim 21, further comprising program code for sending a positive acknowledgement from said receiving or sending device that the missing or mangled data has been received correctly.

37. (Previously Presented) The computer readable medium of claim 21, further comprising program code for sending a plurality of negative acknowledgements in the same negative acknowledgement message.

38. (Previously Presented) The computer readable medium of claim 21, wherein said receiving device is GPRS, WLAN, DVB or other similar wireless device.

39. (Previously Presented) The computer readable medium of claim 21, wherein said sending device is a server, IP-based device, GPRS, DVB or other similar wireless device.

40. (Currently Amended) A system comprising:

at least one sending device for transmitting and scheduling data for delivery to at least one receiving device at different rates and in different layers using Asynchronous Layered Coding (ALC) with congestion control and Forward Error Coding (FEC);

at least one receiving device for determining missing or mangled data transmitted from said sending device for multiple data rates and multiple layers using negative acknowledgement (NACK)-Oriented Reliable Multicast (NORM) protocols at the receiving device with FEC for repair of damaged packets or packets that have not been received; and

sending an acknowledgement or transmission of missing ~~or~~ and mangled data to said sending device or to another receiver regarding retransmission of at least missing or mangled data;

at least one network for establishing communication between said sending device and said receiving device as well as communication between receiving devices in the network; and

transmitting a retransmission of said missing or mangled data from said sending device or said other receiving device in the same and/or different networks to complete the data packet and a data transmission session.

41. (Currently Amended) The ~~s-system~~ system of claim 40, wherein said acknowledgment of said missing or mangled data is a multicast or unicast negative acknowledgement message to the sending device and the another receiving device.

42. (Currently Amended) The ~~s-system~~ system of claim 40, wherein said retransmission of missing or mangled data is a multicast or unicast message from the sending device and/or another receiving device.

43. (Currently Amended ) The ~~s-system~~ system of claim 40, wherein said missing or mangled data are retransmitted from said sending device and/or another receiving device that possesses the missing or mangled data.

44. (Currently Amended) The system of ~~elam~~ claim 40, wherein the retransmission of said missing or mangled data prioritized based on the acknowledgement of missing or mangled data received, number of data transmissions missed, location of missed or mangled data or the like.

45. (Currently Amended) The ~~s-system~~ system of ~~elam~~ claim 40, wherein missing or mangled data are retransmitting along with the entire original data transmission.

46. (Original) The ~~s-system~~ system of claim 40, wherein retransmitting said missing or mangled data involves retransmitting only the missing data of the original data transmission.

47. (Original) The ~~s-system~~ system of claim 40, wherein said retransmitting involves repositioning said missing or mangled data in the data retransmission.

48. (Previously Presented) The system of claim 40, including reliability management and congestion control to facilitate multicast transmission of data packets to receivers.

49. (Previously Presented) The system of claim 40, wherein said data transmitted from said sending device using an active Asynchronous Layered Coding (ALC) mechanism.

50. (Previously Presented) The system of claim 40, further comprising transmitting said acknowledgement from said receiving device using a negative acknowledgement (NACK) and retransmission mechanism.

51. (Currently Amended) The ~~s-system~~ system of claim 40, where said missing or mangled data is from a previous transmission, an earlier transmission or a predicted transmission from said sending device.

52. (Currently Amended ) The ~~s-system~~ system of claim 40, wherein sending device defines unidirectional transmission block identifiers and corresponding objects before transmitting data to the receiving device.

53. (Currently Amended) The ~~s-system~~ system of claim 40, wherein said sending device transmits data using a unidirectional protocol.

54. (Currently amended) The ~~s-system~~ system of claim 52, wherein said receiving device ~~transmit~~ transmits an acknowledgement using a bi-directional or uplink simplex protocol using the same transmission block identifier as the unidirectional protocol.

55. (Currently Amended) The ~~s-system~~ system of claim 40, wherein said sending device and receiving device are in the same network of different networks.

56. (Currently Amended) The ~~s-system~~ system of claim 40, wherein said receiving device is a personal communication device, GPRS, WLAN, DVB of other similar wireless ~~device~~ devices.

57. (Currently Amended) The ~~s-system~~ system of ~~elam~~ claim 40, wherein said sending device is a server, IP-based device, DVB, GPRS or other similar wireless device.

58. (Currently Amended) An apparatus, comprising:

at least one processor for determining missing or mangled data in a data transmission sent by a sending device for multiple data rates and multiple layers using Asynchronous Layered Coding (ALC) with congestion control and Forward Error Coding (FEC);

a negative acknowledgement (NACK) and transmission mechanism for sending an acknowledgement or transmission of missing and mangled data to said sending device ~~or~~ and to another receiving device with FEC for repair of damaged packets or packets that have not been received;

at least one network for establishing communication between said sending device and said receiving device as well as communication between receiving devices in the network;

transmitting a retransmission of said missing or mangled data from said sending device and/or said other receiving device in the same or different networks to complete the data packet and a data transmission session;

and

a memory including a processor, operating system and application programs for and storing the data transmission from the sending device or other receiving device.



59. (Currently Amended) The apparatus of claim 58, wherein said acknowledgment of said missing or mangled data is a multicast or unicast negative acknowledgement message to the sending device and the another receiving device.

60. (Currently Amended) The apparatus of claim 58, wherein said retransmission of missing or mangled data is a multicast or unicast message of the sending device and the another receiving device.

61. (Currently Amended) The apparatus of claim 58, wherein said missing or mangled data is retransmitted from said sending device and/or other receiving device that possesses the missing or mangled blocks.

62. (Currently Amended) The apparatus of claim 58, further comprising sending the original data transmission from said server using an active Asynchronous Layered Coding (ALC) mechanism including forward error coding.

63. (Original) The apparatus of claim 58, where said missing or mangled data is from a previous transmission, an earlier transmission or a predicted transmission.

64. (Original) The apparatus of claim 58, wherein said receiving device is personal communication device, GPRS, WLAN, DVB of other similar wireless device.